

AMENDMENTS TO THE CLAIMS

Please cancel claims 1, 14, 15, 22, 29, 40, 41, amend claims 2-6, 8-11, 13, 17-21, 23-26, 30-37, 39, 43-47, 56-59, and 61-67, and rewrite claims 16, 42, 69, 71, 73, and 74 in independent form without acquiescence to the basis of the rejections set forth in the Office Action, and without prejudice to pursue the previously presented claims in related application(s), as follow. A complete listing of the claims is provided below.

Listing of The Claims

1. **(Canceled)**
2. **(Currently Amended)** The method of claim +69, wherein the contrast agent includes an element selected from the group consisting of iodine, gadolinium, holmium, erbium, lanthanum, cerium, praseodymium, neodymium, samarium, europium, terbium, dysprosium, thulium, ytterbium, and lutetium.
3. **(Currently Amended)** The method of claim +69, wherein the portion of the body comprises at least a portion of a breast.
4. **(Currently Amended)** The method of claim +69, wherein the first energy level is below a k-edge of the contrast agent.
5. **(Currently Amended)** The method of claim +69, wherein the second energy level is above a k-edge of the contrast agent.
6. **(Currently Amended)** The method of claim +69, wherein the first and the second sets of image data are generated by performing a computed tomography procedure.
7. **(Original)** The method of claim 6, wherein the computed tomography procedure is performed using a cone beam.

8. **(Currently Amended)** The method of claim +69, wherein the first and the second sets of image data are generated by performing a MRI procedure.

9. **(Currently Amended)** The method of claim +69, wherein the first and the second sets of image data are generated by performing a PET procedure.

10. **(Currently Amended)** The method of claim +69, wherein the volumetric composite image is created by subtracting the first set of image data from the second set of image data.

11. **(Currently Amended)** The method of claim +69, wherein the volumetric composite image is created by

modifying the first set of image data;

modifying the second set of image data; and

subtracting the first modified set of image data from the second modified set of image data.

12. **(Previously Presented)** The method of claim 11, wherein the acts of modifying comprises applying a logarithmic transform to the first and the second sets of image data.

13. **(Currently Amended)** The method of claim +69, wherein the first and the second sets of image data are generated within 5 to 20 microseconds.

14-15. **(Cancelled)**

16. **(Currently Amended)** The method of claim 15, A method of generating one or more images of a portion of a body, comprising:

introducing a contrast agent into the body;

generating a first set of image data using radiation at a first energy level after the contrast agent is introduced into the body;

generating a second set of image data using radiation at a second energy level after the contrast agent is introduced into the body;

creating a contrast-enhanced volumetric composite image using the first and the second sets of image data, wherein the contrast-enhanced volumetric composite image is created such that at least a portion of the contrast-enhanced volumetric composite image has a feature indicating cancerous tissue, and that an image contrast for bone and tissue that does not contain the contrast agent at another portion of the contrast-enhanced volumetric composite image is reduced; and

at least one of storing the contrast-enhanced volumetric composite image and displaying the contrast-enhanced volumetric composite image;

wherein the first and the second sets of image data are generated using one imager, the imager having a first line, a second line, a third line, and a fourth line of image elements; and

wherein the generating the first and the second sets of image data comprises:

deactivating the first and the third lines of the image elements and activating the second and the fourth lines of the image elements while applying the radiation at the first energy level; and

activating the first, the second, the third, and the fourth lines of the image elements while applying the radiation at the second energy level.

17. (Currently Amended) The method of claim +69, wherein the radiation at either or both of the first and the second energy levels are generated using a multi-energy x-ray source assembly.

18. (Currently Amended) The method of claim +69, wherein the volumetric composite image is created by removing a tissue feature, and retaining a feature attributable to the contrast agent.

19. (Currently Amended) The method of claim +69, wherein the radiation at the first and the second energy levels are generated by switching a x-ray tube voltage between a first and a second levels.

20. **(Currently Amended)** The method of claim ~~4~~69, wherein the radiation at the first and the second energy levels are generated by impinging an electron beam onto a first target material and a second target material, respectively.

21. **(Currently Amended)** The method of claim ~~4~~69, wherein the radiation at the first and the second energy levels are generated by filtering x-rays through a first filter and a second filter, respectively.

22. **(Canceled)**

23. **(Currently Amended)** The system of claim ~~22~~71, wherein the means for generating the first and the second sets of image data comprises one or more imagers.

24. **(Currently Amended)** The system of claim ~~22~~71, further comprising a x-ray source assembly for generating the radiation at the first and the second energy levels, the x-ray source assembly having one or more target materials.

25. **(Currently Amended)** The system of claim ~~22~~71, further comprising a x-ray source assembly for generating the radiation at the first and second energy levels, wherein the x-ray source assembly comprises a plurality of filters for filtering x-ray.

26. **(Currently Amended)** The system of claim ~~22~~71, further comprising a x-ray source assembly for generating the radiation at the first and second energy levels, wherein the x-ray source assembly comprises a plurality of the target materials.

27. **(Original)** The system of claim 26, wherein the x-ray source assembly further comprises means for generating electrons, and means for impinging the electrons onto one of the plurality of the target materials.

28. **(Original)** The system of claim 27, wherein the means for impinging comprises an electromagnetic field generator for deflecting the electrons such that they impinge onto the one

of the plurality of the target materials.

29. (Canceled)

30. (Currently Amended) The computer product of claim 29 73, wherein the first energy level is below a k-edge of a contrast agent.

31. (Currently Amended) The computer product of claim 29 73, wherein the second energy level is above a k-edge of a contrast agent.

32. (Currently Amended) The computer product of claim 29 73, wherein the first and the second sets of image data are generated by performing a computed tomography procedure.

33. (Currently Amended) The computer product of claim 29 73, wherein the computed tomography procedure is performed using a cone beam.

34. (Currently Amended) The computer product of claim 29 73, wherein the first and the second sets of image data are generated by performing a MRI procedure.

35. (Currently Amended) The computer product of claim 29 73, wherein the first and the second sets of image data are generated by performing a PET procedure.

36. (Currently Amended) The computer product of claim 29 73, wherein the volumetric composite image is created by subtracting the first set of image data from the second set of image data.

37. (Currently Amended) The computer product of claim 29 73, wherein the volumetric composite image is created by modifying the first set of image data; modifying the second set of image data; and subtracting the first modified set of image data from the second modified set of image data.

38. **(Previously Presented)** The computer product of claim 37, wherein the acts of modifying comprises applying a logarithmic transform to the first and the second sets of image data.

39. **(Currently Amended)** The computer product of claim 29 73, wherein the first and the second sets of image data are generated within 5 to 20 microseconds.

40-41. **(Cancelled)**

42. **(Currently Amended)** The computer product of claim 41, A computer product having a set of stored instructions, the execution of which causes a process to be performed, the process comprising:

generating a first set of image data for a bodily region that includes a contrast agent using radiation at a first energy level;

generating a second set of image data for the bodily region that includes the contrast agent using radiation at a second energy level;

creating a contrast-enhanced volumetric composite image using the first and the second sets of image data, wherein the contrast-enhanced volumetric composite image is created such that at least a portion of the contrast-enhanced volumetric composite image has a feature indicating cancerous tissue, and that an image contrast for bone and tissue that does not contain the contrast agent at another portion of the contrast-enhanced volumetric composite image is reduced; and

at least one of storing the contrast-enhanced volumetric composite image and displaying the contrast-enhanced volumetric composite image;

wherein the first and the second sets of image data are generated using one imager, the imager having a first line, a second line, a third line, and a fourth line of image elements; and

wherein the generating the first and the second sets of image data comprises:

deactivating the first and the third lines of the image elements and activating the second and the fourth lines of the image elements while applying the radiation at the first energy level; and

activating the first, the second, the third, and the fourth lines of the image elements while applying the radiation at the second energy level.

43. **(Currently Amended)** The computer product of claim 29 73, wherein the radiation at either or both of the first and the second energy levels are generated using a multi-energy x-ray source assembly.

44. **(Currently Amended)** The computer product of claim 29 73, wherein the volumetric composite image is created by removing a tissue feature, and retaining a feature attributable to the contrast agent.

45. **(Currently Amended)** The computer product of claim 29 73, wherein the radiation at the first and the second energy levels are generated by switching a x-ray tube voltage between a first and a second levels.

46. **(Currently Amended)** The computer product of claim 29 73, wherein the radiation at the first and the second energy levels are generated by impinging an electron beam onto a first target material and a second target material, respectively.

47. **(Currently Amended)** The computer product of claim 29 73, wherein the radiation at the first and the second energy levels are generated by filtering x-rays through a first filter and a second filter, respectively.

48.-55. **(Cancelled)**

56. **(Currently Amended)** The method of claim +69, wherein the first set of image data comprises data sufficient for generating a volumetric image.

57. **(Currently Amended)** The method of claim +69, wherein the first set of image data comprises a plurality of image frames generated by placing a radiation source in different orientations.

58. **(Currently Amended)** The system of claim 22 71, wherein the first set of image data comprises data sufficient for generating a volumetric image.

59. **(Currently Amended)** The system of claim 22 71, wherein the first set of image data comprises a plurality of image frames generated by placing a radiation source in different orientations.

60. **(Previously Presented)** The method of claim 57, wherein the radiation source is coupled to a gantry, and the act of placing the radiation source in different orientations comprises placing the radiation source at a first gantry angle, and placing the radiation source at a second gantry angle.

61. **(Currently Amended)** The system of claim 22 71, wherein the means for generating the first set of image data comprises a detector and a positioner for placing the detector in different positions.

62. **(Currently Amended)** The method of claim +69, wherein the volumetric composite image is created by determining a first volumetric image from the first set of image, determining a second volumetric image from the second set of image, and subtracting the first volumetric image from the second volumetric image.

63. **(Currently Amended)** The method of claim +69, wherein the volumetric composite image is created by obtaining a set of composite images using the first and second sets of image data, the set of composite images being two-dimensional images, and constructing the volumetric composite image using the set of composite images.

64. **(Currently Amended)** The system of claim 22 71, wherein the means for creating the volumetric composite image is configured to determine a first volumetric image from the first set of image, determine a second volumetric image from the second set of image, and subtract the first volumetric image from the second volumetric image.

65. **(Currently Amended)** The system of claim 22 71, wherein the means for creating the volumetric composite image is configured to create the volumetric composite image by obtaining a set of composite images using the first and second sets of image data, the set of composite images being two-dimensional images, and constructing the volumetric composite image using the set of composite images.

66. **(Currently Amended)** The computer product of claim 29 73, wherein the volumetric composite image is created by determining a first volumetric image from the first set of image, determining a second volumetric image from the second set of image, and subtracting the first volumetric image from the second volumetric image.

67. **(Currently Amended)** The computer product of claim 29 73, wherein the volumetric composite image is created by obtaining a set of composite images using the first and second sets of image data, the set of composite images being two-dimensional images, and constructing the volumetric composite image using the set of composite images.

68. **(Canceled)**

69. **(Currently Amended)** The method of claim 1, further comprising: A method of generating one or more images of a portion of a body, comprising:
introducing a contrast agent into the body;
generating a first set of image data using radiation at a first energy level after the contrast agent is introduced into the body;
generating a second set of image data using radiation at a second energy level after the contrast agent is introduced into the body;
creating a contrast-enhanced volumetric composite image using the first and the second sets of image data, wherein the contrast-enhanced volumetric composite image is created such that at least a portion of the contrast-enhanced volumetric composite image has a feature indicating cancerous tissue, and that an image contrast for bone and tissue that does not contain the contrast agent at another portion of the contrast-enhanced volumetric composite image is reduced;

at least one of storing the contrast-enhanced volumetric composite image and displaying the contrast-enhanced volumetric composite image;

determining information regarding time-resolved kinetics of the contrast agent in the body based at least in part on the volumetric composite image;

providing a first graphic that indicates the determined information; and

providing a second graphic that indicates time-resolved kinetics of a contrast agent in normal tissue, the contrast agent in the normal tissue being a same type as the contrast agent in the body;

wherein the first and second graphics are provided in a same graph for comparison.

70. (Canceled)

71. (Currently Amended) The system of claim 22, further comprising: A system of generating one or more images of a portion of a body after a contrast agent is introduced into the body, the system comprising:

means for generating a first set of image data using radiation at a first energy level after the contrast agent is introduced into the body;

means for generating a second set of image data using radiation at a second energy level after the contrast agent is introduced into the body, wherein the first energy level is below a k-edge of the contrast agent, and the second energy level is above a k-edge of the contrast agent;

means for creating a contrast-enhanced volumetric composite image using the first and the second sets of image data, wherein the means for creating is configured to create the contrast-enhanced volumetric composite image such that at least a portion of the contrast-enhanced volumetric composite image has a feature indicating cancerous tissue, and that an image contrast for bone and tissue that does not contain the contrast agent at another portion of the contrast-enhanced volumetric composite image is reduced;

means for determining information regarding time-resolved kinetics of the contrast agent in the body based at least in part on the volumetric composite image; and

means for displaying a first graphic and a second graphic in a same graph, wherein the first graphic indicates the determined information, and the second graphic indicates time-

resolved kinetics of a contrast agent in normal tissue, the contrast agent in the normal tissue being a same type as the contrast agent in the body.

72. (Canceled)

73. (Currently Amended) The computer product of claim 29, wherein the process further comprises: A computer product having a set of stored instructions, the execution of which causes a process to be performed, the process comprising:

generating a first set of image data for a bodily region that includes a contrast agent using radiation at a first energy level;

generating a second set of image data for the bodily region that includes the contrast agent using radiation at a second energy level;

creating a contrast-enhanced volumetric composite image using the first and the second sets of image data, wherein the contrast-enhanced volumetric composite image is created such that at least a portion of the contrast-enhanced volumetric composite image has a feature indicating cancerous tissue, and that an image contrast for bone and tissue that does not contain the contrast agent at another portion of the contrast-enhanced volumetric composite image is reduced;

at least one of storing the contrast-enhanced volumetric composite image and displaying the contrast-enhanced volumetric composite image;

determining information regarding time-resolved kinetics of the contrast agent in the body based at least in part on the volumetric composite image;

providing a first graphic that indicates the determined information; and

providing a second graphic that indicates time-resolved kinetics of a contrast agent in normal tissue, the contrast agent in the normal tissue being a same type as the contrast agent in the body;

wherein the first and second graphics are provided in a same graph for comparison.

74. (Currently Amended) The system of claim 22, A system of generating one or more images of a portion of a body after a contrast agent is introduced into the body, the system comprising:

means for generating a first set of image data using radiation at a first energy level after the contrast agent is introduced into the body;

means for generating a second set of image data using radiation at a second energy level after the contrast agent is introduced into the body, wherein the first energy level is below a k-edge of the contrast agent, and the second energy level is above a k-edge of the contrast agent; and

means for creating a contrast-enhanced volumetric composite image using the first and the second sets of image data, wherein the means for creating is configured to create the contrast-enhanced volumetric composite image such that at least a portion of the contrast-enhanced volumetric composite image has a feature indicating cancerous tissue, and that an image contrast for bone and tissue that does not contain the contrast agent at another portion of the contrast-enhanced volumetric composite image is reduced;

wherein the means for generating the first set of image data and the second set of image data comprises an imager having a first line of image elements, a second line of image elements, a third line of image elements, and a fourth line of image elements; and

wherein the imager is configured to deactivate the first and the third lines of the image elements and activate the second and the fourth lines of the image elements while applying the radiation at the first energy level, and activate the first, the second, the third, and the fourth lines of the image elements while applying the radiation at the second energy level.